IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.	:	**09/471,659**
Appellant	:	**CLARK, Lloyd, et al.**
Filing Date	:	**12/24/1999**
Confirmation No	:	**7775**
Art Unit	:	**2611**
Examiner	:	**ODOM, Curtis B.**
Docket No.	:	**59.0021**

Mail Stop Appeal Brief-Patents
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Alexandria, VA 22313-1450

APPELLANT'S REPLY BRIEF UNDER 37 CFR 41.41

Appellants file this Reply Brief under 37 CFR 41.41 in response to the Examiner's Answer mailed on December 31, 2007.

Appellants respectfully disagree with the Examiner's application of *KSR International Co. v. Teleflex Inc.*, 127 SCt 1727, 82 USPQ2d 1385 (U.S. 2007) and the Examiner's application of the Examination Guidelines for Determining Obviousness set forth in the *MPEP* at Section 2141. Furthermore, Appellants respectfully disagree with the manner in which the Examiner summarizes the invention, and the Examiner's reasons stated in support of an argument that there is motivation to combine the various prior art references relied on by the Examiner.

The Examiner's Rationale for a Conclusion of Obviousness based on Guidelines derived from *KSR.*

In the Response to Arguments section of the Examiner's Answer (*Examiner's Answer,* Pages 33-45), the Examiner quoted *MPEP 2141* which in turn quotes *KSR* as follows:

> "'[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR*, 550 U.S. at ___, 82 USPQ2d at 1396. Exemplary rationales that may support a conclusion of obviousness include:...
>
> (D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;'" (*Examiner's Answer, quoting, MPEP* at 2141)

In rejecting the claims and attempting to meet this standard the Examiner stated that he "has used the rationale that a known technique is being applied to a known device to support the legal conclusion of obviousness with regards to the obviousness rejection of the claims under appeal." *Examiner's Answer,* Page 34. The Examiner continued with "[i]n this instance, the known technique is multicarrier modulation, wherein the known device is a well-logging telemetry device. The present invention as claimed simply takes a well known form of multicarrier modulation (DMT) and simply uses the modulation in a known transmission/reception system in a well-logging environment which uses cables as a propagation medium between the transmitter and receiver." *Id.*

Appellants' invention is significantly more than a multicarrier modulation (DMT) transmission/reception system in a well-logging environment, which uses cables as a propagation medium between a transmitter and receiver.

As discussed in *Appellants' Brief* and in the declarations of Dr. Lloyd Clark and Mr. Michael Montgomery, originally submitted with the office action response on December 9, 2005 and also submitted with the Appeal Brief filed July 30, 2007, there is nothing particularly simple about applying DMT in the well-logging environment. To address the difficulties encountered in attempting to solve that problem, the inventors applied several specific techniques to prior art DMT systems when adapting DMT for use in the well-logging environment. Each of the independent claims provide at least one additional limitation directed to those specific techniques used by the inventors to overcome the challenges of applying DMT in the well-logging environment.

Therefore, it is not accurate to state that the invention simply uses a well-known form of multicarrier modulation in a known transmission/reception system in a well-logging environment. One also has to recognize the difficulties encountered and the claimed solutions to those difficulties.

The rationale relied on by the Examiner for his conclusion of obviousness is stated in its entirety in the MPEP as "Applying a known technique to a known device (method, or product) ready for improvement *to yield predictable results*." *MPEP* at Section 2141. The cited prior for DMT comes from the telephony area (*Bremer* 6,647,058*; Isaksson* 6,493,395*; Cioffi* 6,473,438*; Matsumoto* 6,522,731*; Bae* 5,832,387*; Van Kerhove* 5,812,599, collectively, the *Telephony References*). To address that *predictable result* the Examiner made the conclusory statement that the predictable result is "the transmission and reception of data using a plurality of carriers/frequencies in a well-logging communications system." *Examiner's Answer*, Page 34, Lines 17-19. While Appellants have achieved transmission and reception of data using a plurality of carriers/frequencies in a well-logging communications system, this is not the predictable result from the application of the *Telephony References* to the well logging references, e.g., *Gardner*.

In their intended applications, each of the *Telephony References* would not encounter the difficult operating environment of well-logging wireline telemetry systems – long cables not particularly well-suited for data communication, a dynamic environment that includes high-temperatures and pressures, as well as electrical property changes due to the movement of the downhole equipment in the hole and the reeling in of the cable. On the contrary, the telephony applications of DMT operate at ambient temperatures normally encountered on Earth's surface, on static and short cable lengths, and at atmospheric pressure. With the operating parameters of telephony based DMT, the application of those techniques to the well-logging environment is far from predictable. In fact, the predictable result would be that applying the *Telephony References* to the well logging environment would not work.

In discussing, the rule that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results," (which is the foundation for the Examiner's cited rationale to support obviousness) the Court explained that "if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *KSR, 127 S.Ct. at 1739, 82 USPQ2d at 1396, quoted in, Ex parte Catan,* 83 USPQ2d 1569 (Bd. Pat. App. & Int. 2007). As has been discussed in the Appellants' Brief and in the declarations of Dr. Lloyd Clark and Mr. Michael Montgomery, it is quite beyond the skills of person of ordinary skill in the art to apply DMT as taught in the *Telephony References* to the well-logging environment and to have success in doing so.

To make a functioning system, the inventors applied several specific improvements to the mere application of DMT to well logging telemetry. These improvements are set forth in the independent claims as additional

elements. Thus, for each claim set, the Examiner has had to rely on a well logging reference, a first *Telephony Reference,* and a third reference for that specific additional element. Therefore, the combination of these references would require the person of ordinary skill to not only conceive of the adaptation of Gardner to multi-carrier modulation, but also recognize the problems to be encountered in doing so, and finding the particular solutions to those problems that are claimed by Appellants.

Motivation to Combine Gardner, Isaksson, and Bremer

The by-the-Examiner-stated motivation to combine Isaksson with Gardner is "the statement of Isaksson that DMT modulation handles frequency dependent loss and noise in cables in an efficient manner and also provides high bit rate traffic over cables." *Examiner's Answer*, Page 38, Lines 4-5. Appellants disagree with this motivation to combine Isaksson with Gardner.

It should be noted that Isaksson teaches that a multi-carrier modulation technique can handle frequency dependent loss and noise in twisted pair cables in an efficient manner by examining individual carrier signal-to-noise ratios and allocating transmission power in response. *Isaksson,* Col. 7, lines 5-11. Thus, there is an assumption that there are multiple carriers present.

Gardner states (in the passage cited by the Examiner) "[t]elemetry signal distortion is a function of such things as cable manufacturer, cable type, cable length, cable condition, depth in hole, and well temperature gradient." *Gardner,* Col. 1, lines 24-27. (Note: frequency dependent loss is not mentioned!)

To overcome that Gardner does not mention anything about frequency dependent loss, the Examiner continues his argumentation by pointing to that Gardner is communicating at some frequency and therefore there would be noise at that frequency. From that the Examiner concludes that there is

sufficient motivation to combine the references based on Isaksson's teaching that DMT is efficient at handling frequency dependent loss. That Gardner teaches that there is loss and distortion on the cables used therein is not sufficient for the conclusion that there is frequency dependent loss.

Therefore, Appellants disagree that motivation to combine can be based on such a circuitous argumentation. The argumentation presumes a recognition that there is a frequency dependent loss and that there are multiple carrier frequencies. Neither of which is suggested by Gardner.

In regard to expectation of success, the Examiner dismisses Appellants' argument in regard to the difficulty of applying the teachings of Isaksson in systems having cables as long as those encountered in well logging by making reference to wireless systems. *Examiner's Answer,* Page 39, Line 16 – Page 40, Line 4. Particularly, the Examiner states "that multi-carrier modulation can be implemented into wireless technology which can span an area much greater that (sic) any man-made cable." *Id.* Page 39, lines 20-22.

Appellants respectfully request the Board take notice of the irrelevance of this remark. Isaksson deals with twisted-pair copper cables. Appellants deal with seven-conductor (usually) wireline cables. The difficulties encountered in those respective environments may not be present in a wireless communications medium. For example, wireline cables are required to carry electrical power to down-hole tools. That causes communications interference. By definition wireless communication will not carry electrical power. Cross-talk is a frequently encountered problem in wired communication. Thus, it does not follow that because one could use DMT in a wireless communication over great distances, that one could apply Isaksson's short-distance twisted-pair based solutions with success on a well logging wireline cable that may exceed 30,000 feet in length.

It should be further noted that the solution set forth in Claims 8, 13, 20, and 30 (the claims for with the combination of Gardner, Isaksson, and

Bremer is applied) is different from the solution suggested by Isaksson. Thus, the solution to the problem that supposedly motivates the proposed combination of Isaksson with Gardner is not even the one that is claimed in the claims for which this combination of references are cited. Rather, the Examiner pulls in Bremer for that portion of the claims, namely the optimization of the total transmission power applied to the wireline.

To motivate the combination of Bremer with Gardner and Isaksson the Examiner points to that "Bremer discloses allowing the adjustment of transmission power level can avoid unnecessary power consumption." It must be noted that Bremer makes that statement relative to the observation that "simply boosting the transmit power level … may result in unnecessary power consumption." (*Bremer,* Col. 4, Line 65-Col. 5, Line 1). To remedy that problem, Bremer proposes alternative approaches. Thus, the Examiner's stated reason for combining Bremer is a problem that is created by that portion of the solution allegedly proposed by Bremer. In other words, only if you combine Bremer with Gardner and Isaksson would you encounter the problem for which Bremer supposedly provides a motivation to combine. This reasoning is circular logic because it is only when you add Bremer to the combination of Gardner and Isaksson that you have a reason to worry about the results from boosting the transmit power level.

Accordingly, Appellants respectfully request that the Board rule that the Examiner has not provided a motivation to combine Bremer with Gardner and Isaksson.

Combinations of Cioffi and Gardner

The arguments hereinabove with respect to the combining the *Telephony References* with Gardner apply to Cioffi and are incorporated here by reference.

In making the statement that "[i]t is also the understanding of the Examiner that there is a reasonable expectation of success when applying the

multicarrier modulation over cable of Cioffi (see Abstract) to cable telemetry system of Gardener (sic)," as with the other *Telephony References*, the Examiner has ignored or merely brushed aside the problems associated with applying DMT telemetry to the well logging environment.

Conclusion

As demonstrated hereinabove, the Examiner's stated rationale in support of his conclusion of obviousness based on the guidance from *KSR* is flawed. *KSR* lays out a rule that "a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR,* at 1389. The Examiner has made the conclusory statement that the predictable result is "the transmission and reception of data using a plurality of carriers/frequencies in a well-logging communications system." *Examiner's Answer*, Page 34, Lines 17-19. While Appellants have achieved that, that is not the predictable result from the application of the *Telephony References* to the well logging references, e.g., *Gardner*.

The Examiner's reasoning in support for the motivation to combine the *Telephony References* with *Gardner* is at best very remote (*e.g., Isaksson's* statement that DMT can efficiently handle frequency dependent loss when there is no indication that *Gardner* faces a frequency dependent signal loss or distortion problem) or totally illogical (*e.g.,* relying on a problem caused by the teaching of a reference to motivate the combination with that reference as in the argument made with respect to the combination of Bremer with Gardner and Isaksson).

For the foregoing reasons, Appellants respectfully submit that the Examiner has not adequately provided "articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR at* 1396, *quoting, In re Kahn,* 78 USPQ2d 1329, 1336 (Fed. Cir. 2006).

The purpose of this Reply Brief is to argue certain errors underpinning the Examiner's arguments. As such Appellants have focused herein on certain points made in the Examiner's Answer. Appellants failure to address any particular argument made by the Examiner should not be taken as agreement with such positions taken by the Examiner and not specifically addressed herein.

Respectfully Submitted,

/Pehr Jansson/

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Date: February 29, 2008

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